Wireless Equipment Monitoring

WIRELESS MESH M2M NETWORKS CAN DETERMINE MOTOR HEALTH AND PREDICT FAILURES.

Did you know that electric motor energy consumption accounts for 23% of all energy use in the United States and 62% of industrial electricity usage? In these times of soaring energy costs, ensuring these motors are operating efficiently can have a substantial impact on bottom lines. Existing industrial manufacturers spend countless dollars on scheduled preventative maintenance and inventorying surplus motors to ensure that their motors are continuously operating efficiently and with no downtime. The ability to monitor their motors in real-time will not only help manufacturers better understand failure mechanisms, but also permit action to be taken prior to motor failure.

Currently, only the largest, most critical motors are monitored. This is because the costs of the components required to implement condition-based monitoring on motors can be overwhelming. However, by leveraging new, inexpensive RF components and integration techniques, along with advances in sensor technology, it is possible to provide an economic M2M solution for wirelessly monitoring motor operating parameters to a broader class of devices. By monitoring motor's properties, such as temperature, vibration, and current one can detect output power, bearing lubrication degradation and material breakdown.

Using SensiNet® to Monitor Temperature in Water Circulation Pump Motor

These new radio frequency systems - wireless mesh sensor networks - are being deployed today in various monitoring and control applications. Over 240 million wireless sensor nodes are to be deployed by 2007 driving a wide range of new M2M applications, according to On World Research, a market research firm that specializes in Industrial Automation.

In one specific application, a nuclear power plant deployed a wireless M2M mesh sensor network to continuously monitor the stator temperature of water circulation pumps to provide a real-time "health" metric of the motor and proactively predict motor failure. If any of these motors were to fail unexpectedly, the plant would operate at only 80% capacity, resulting in hundreds of thousand dollars of losses. Effectively collecting and analyzing motor temperature data in real-time allows preventative action to be taken prior to catastrophic failure. "We needed a wireless monitoring system that was easy (and inexpensive) to install, simple to maintain and would perform well in the plant environment," said personnel from the facility's maintenance engineering department.

The benefit of using wireless mesh networks in motor monitoring and other M2M equipment monitoring applications will continue to expand as the cost to deploy wireless sensors is reduced and the modeling tools that utilize the collected data improve. Even with systems in use today, however, substantial reductions in maintenance budgets – and benefits from conserving energy – are now being realized.

WIRELESS SENSOR NETWORKS

Sensicast Systems, Inc., www.sensicast.com, Needham, MA, founded in 2002, is the leading provider of end-to-end wireless mesh sensor networks systems and technology to integrators and original equipment manufacturers in the industrial and building monitoring markets. The Sensicast Sensor Networking Platform is the quickest and most robust way to deploy a wireless condition-based monitoring system.

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